# **Syllabus/Course Outline**

# ***RCC Electronics Technology Department***

# ***EET101- Electronics Fundamentals for Non-Majors, 3 credits***

# ***2023/2024***

**Instructor:** Your name

**Email:** Your email

**Phone:** Your phone number

**High School:** Your high school name

**Length of RCC Course:**A required State minimum of (60) and a standard RCC delivery of

(66) **lecture/lab** hours

**Length of HS Course:**Length of your course (is. Semesters, trimesters, etc. If it takes 1 or 2

semesters to earn the RCC credit, please explain that here

**Prerequisites:** [MTH20](http://www.roguecc.edu/Schedule/?coursenumber=MTH20) is recommended

# **Course Description**

Introduces the fundamental theories, circuits, and devices used in electronics. Covers direct and alternating current theory, test equipment, semiconductor devices and motors. Emphasizes practical concepts and applications in both lectures and laboratory experiments. Suitable for those desiring a general knowledge of electronics or exploring how electronic circuits and systems are used in other fields. A 2-hour per week open-laboratory includes the application of computer tools in circuit design, evaluation, troubleshooting, and analysis. Promotes and supports sustainable and green technologies.

# **Required texts**

List required textbooks here

# **Other materials/supplies**

Mechanical pencil, Engineering calculator, three-ring lab notebook.

# **Institutional Learning Outcomes**

Institutional Learning Outcomes (ILOs) are skills that will contribute to your success in life beyond RCC. Rogue’s ILOs are: Communication, Critical Thinking, Equity, Diversity, Inclusion, and Global Consciousness, Information Literacy, and Quantitative Literacy and Reasoning. Why are they important? Employers call these soft skills or employability skills. They may help you get and keep a job. These are skills that will help you complete a 4-year degree. They are skills for success in your life as a family member, worker, citizen, life-long learner, and more.

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| **Communication (COM)**  | Students will engage in effective communication using active reading and listening skills and expressing ideas appropriately in oral, written, and visual work. |
| **Critical Thinking (CT)** | Students will explore, reach, and support appropriate conclusions through the analysis, synthesis, and evaluation of information and varying opinions. |
| **Equity, Diversity, Inclusion****and Global Consciousness****(EDI & GC)** | Students will recognize and identify equity, diversity, inclusion and global consciousness as it applies to people and the world today. |
| **Information Literacy (IL)** | Students will identify an information need and locate, evaluate, and use information effectively and ethically. |
| **Quantitative Literacy and****Reasoning (QL & R)** | Students will reason through and solve quantitative problems by collecting and interpreting data and applying mathematical/statistical techniques. |

# **Course Learning Outcomes**

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| **Course Learning Outcomes** | **ILO Key Indicators** |

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| 1. Demonstrate a basic knowledge of DC/AC, digital, and solid-state electronic terminology and concepts including calculating voltage, current, resistance and power distribution in series, parallel and series/parallel circuits. |  |
|  2. Demonstrate basic proficiency in operation of electronic test equipment including digital multimeters (DMMs), DC power supplies, logic probes, function generators, and oscilloscopes.  | Quantitative Literacy andReasoning  |
|  3. Demonstrate a working knowledge of introductory electronics circuits including series and parallel, loaded voltage dividers, filters, power supplies, digital logic devices, and DC Motor drivers.  |   |
|  4. Document circuit operation and functions using verbal and written descriptions that meet laboratory standards.  |  |
|  5. Demonstrate an understanding of safety practices in the lab and work place. |  |

# **Learning Experiences**

[*Describe what activities the students will engage in during class and outside of class to contribute to their learning; some examples: lecture, small-group work, reading, research, role play, etc.]*

# **Grading Information**

*[Include a description of the criteria for grading and the assessments that will comprise the grade for the course. Also include a statement about when students can expect to receive feedback on assignments, papers, tests, etc.]*

**RCC Grading:**

Classes are graded A, B, C, D, F.

No tests can be retaken for the RCC grade that you receive for this class.

Courses taken for college credit will appear on a student’s permanent college transcript and will show the grade earned.

# **EXPECTATIONS FOR STUDENTS**

 *[Include any statements of expectations regarding homework, late work, etc.]*

# **Attendance**

*[Describe your policy on attendance and the consequences of missing class.]*

* **Withdrawal from class:** A student may withdraw from a College Now class according to the schedule found on the College Now website:  <https://www.roguecc.edu/collegeNow/dualCredit_AcaCalendar.asp>. A grade of W will be assigned.  Students should be aware that withdrawing from a course may impact financial aid when they attend college after high school. To read about the impact withdrawing may have, please visit: <https://www.roguecc.edu/enrollmentServices/sap.asp>

# **Academic Integrity**

Academic Integrity is expected for all students at RCC. Learning is built on the qualities of honesty, fairness, respect, and trust. At RCC, academic integrity is a shared endeavor characterized by truth, personal responsibility, and high academic standards. An important aspect of academic integrity is academic honesty. Violations of academic honesty include, but are not limited to: plagiarism, collusion, inappropriate assistance, cheating, fabrication, falsification, alteration, unauthorized multiple submission, sabotage, tampering*, and sharing classroom documents, including test items, with other students or with online platforms*. All acts of academic dishonesty are regarded as serious offenses. Students who violate academic honesty or academic integrity will be subject to disciplinary action. Instructors have the right to act on any suspected acts of academic dishonesty. Depending on the nature of the offense, serious penalties may be imposed, ranging for loss of points to expulsion from the class or college.

# **Classroom Behavior**

Expectations for classroom behavior are outlined in the Standards of Student Conduct, available in the catalog, and online. Students may not engage in any activity which the instructor deems disruptive or counterproductive to the goals of the class. Instructors have the right to remove students from class for not following the Standards of Student Conduct or other specified classroom rules. Expectations for behavior in online classes are similar to what is required in the classroom.

**Student Evaluations of this Course**
Students enrolled in College Now courses will receive a course evaluation to complete towards the end of the term for the courses they are enrolled in. The course evaluations are anonymous and will provide valuable feedback to RCC about your experiences in, and your impressions of, the course.

# **Access and Disability Resources**

High schools and colleges operate under different guidelines for students with disabilities. Students enrolled in RCC’s various dual credit programs must meet the college requirements to be eligible for the college credit. Reasonable adjustments in teaching methods and/or assessment delivery that do not alter the essential content of a course may be possible, but all students must meet the student learning outcomes and the assessment rigor of the course to be eligible for college credit.

Services for students who experience disabilities:

* High school students taking College Now classes taught by high school teachers at the high school are to work with their high school for accommodations or adjustments.
* High school students who also take RCC courses at an RCC campus should contact RCC’s Access Office.

Redwood Campus

Phone: 541-956-7337; Oregon Relay Service: 7-1-1

Riverside and Table Rock Campuses

Phone: 541-956-7337; Oregon Relay Service: 7-1-1

For more information, go to Access and Disability Resources: <https://web.roguecc.edu/disability-services> or email AccessOffice@roguecc.edu

# **Discrimination, Harassment and Sexual Violence Policies**

Rogue Community College does not discriminate in any programs, activities, or employment practices on the basis of race, color, religion, ethnicity, use of native language, national origin, sex, sexual orientation, gender identity, marital status, veteran status, disability, age, pregnancy, or any other status protected under applicable federal, state, or local laws.

RCC is committed to providing an academic and work environment free from all forms of discrimination and harassment. In accordance with federal and state law, RCC prohibits illegal discrimination and harassment, works to inform individuals of their right to be free from such behaviors, and promotes the safety of all at College sites and activities. RCC’s prohibition includes all forms of sex discrimination--including instances of sexual harassment such as sexual assault, domestic violence, gender-based stalking, and sexual violence--which are also prohibited by Title IX of the Education Amendments of 1972.

For further policy information and for a full list of regulatory specific contact persons visit the following webpage: <http://www.roguecc.edu/nondiscrimination>

For further information regarding Title IX at RCC, go to <https://www.roguecc.edu/titleIX>/

# **Student Handbook**

Students should read and understand the Dual Credit Handbook for Students. There is important information covering many topics and most questions will be answered by reviewing this handbook. <https://www.roguecc.edu/HS/Handbooks/StudentHandbook.pdf>

# **Important RCC College Now Dates and Times**

The deadline to add a class, withdraw from a class, term end/start dates, and the dates grades are available are listed at <https://www.roguecc.edu/collegeNow/dualCredit_AcaCalendar.asp>

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| **Tutoring Center** Tutoring Centers provide free tutoring service if you are registered in credit courses at Rogue Community College. The primary areas of tutoring are math, writing and science; however, tutors are prepared to cover most subjects. There is also online tutoring available. Please visit the tutoring center webpage for more details: <https://www.roguecc.edu/dept/academicSuccess/tutor.asp> |

# **Course Outline**

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| **Week** | **Chapter(s)** | **Assignment/ Due date** |
| Week 1 |  |  |
| Week 2 |  |  |
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**\*\*Additionally, all students must complete a Rogue Community College Course Evaluation for the class. \*\***

# **TYPICAL COURSE OUTLINE:**

I. Career Opportunities and Safety Requirements in Electronics

A. Career Trends, Salary Ranges, Education requirements.

B. Where are Electronic systems used in other industries?

C. Safety Standards when working with Electronic Systems and Components

1. "Restriction of (the use of certain) Hazardous Substances in electrical and electronic Equipment" or RoHS.

2. Electric Static Discharge (ESD) protocols for equipment and components.

II. Become Familiar with and Apply Basic Concepts of Electricity

A. The Field of Electronics and Definition

B. Conductors, Semiconductors and Insulators

C. Electrical Quantities

D. Electrical Circuit

III. Describe and Use Electrical Quantities and Components

A. Electrical Units and Abbreviations

B. Metric Prefixes

C. Conductor Characteristics

D. Resistors

E. Color Code

F. V, I and R Meter Measurements

G. Schematic Symbols and Diagrams

IV. Apply Ohm’s Law to Single Loads

A. Ohm’s Law V, I and R Relationship

B. Metric Prefixes and Powers of 10

C. Direction of Current Flow

D. Voltage and Polarity

E. Work, Energy, and Power

F. Watt’s Power Formula

V. Describe and Be Able to Calculate, Build, and Measure Series Circuits

A. Definition and Characteristics

B. Voltage in Series Circuits

C. Kirchhoff’s Voltage Law

D. Power

E. Effects of Opens and Shorts in Series

VI. Describe and Be Able to Calculate, Build, and Measure Parallel Circuits

A. Definition and Characteristics

B. Kirchhoff’s Current Law

C. Resistance in Parallel Circuits

VII. Describe and Be Able to Calculate, Build, and Measure Series-Parallel Circuits

A. Definition

B. Recognition and Analysis

C. Total Resistance in Series-Parallel

VIII. Solar Applications

A. Understanding Solar Panels

B. Measuring Voltage and Current Capacity

C. Using to drive a load

IX. Interpret Basic AC Qualities

A. Sine-wave signals

B. Rate of change

C. Period and frequency

X. Use Basic Test Equipment to Make Safe and Accurate Electrical Measurements

A. Function generators

B. Digital Multimeters and LCR meters

C. Oscilloscopes

XI. Describe Basic Transformer Action and Calculate Using Turn Ratio Characteristics

A. Theory of operation

B. Safety and Use

XII. Interpret and Convert Digital Number Systems

A. Binary

B. Hexadecimal

XIII. Use Digital Test Equipment to Confirm Logic Levels

1. Logic probes

XIV. Use Digital IC Logic Devices to Verify Truth Tables

A. AND, OR, NOT Gates

B. Logic symbols

C. Truth Tables

XIV. Calculate Home Lighting Costs

A. Calculate Costs of Differing Lighting Sources

B. Compare and Contrast Lighting Costs of Conventional vs. LED Lighting